

Claims

1. A portable heating pack comprising:
a supercorroding metallic alloy powder adapted to produce heat and gaseous hydrogen upon contacting a corroding liquid; and means for consuming and/or storing said gaseous hydrogen.
2. The portable heating pack according to claim 1, wherein said portable heating pack further comprises means for conducting heat produced within said portable heating pack to the exterior of said portable heating pack.
3. The portable heating pack according to claim 1, wherein said supercorroding metallic alloy is a magnesium-iron alloy.
4. A portable heating pack comprising:
a supercorroding metallic alloy adapted to produce heat and gaseous hydrogen upon contacting a corroding liquid; and a hydrogen storage material adapted to absorb said gaseous hydrogen.
5. The portable heating pack according to claim 4, wherein said supercorroding metallic alloy is disposed in a container adapted to receive said corroding liquid and allow said corroding liquid to contact said supercorroding metallic alloy.

6. The portable heating pack according to claim 5, wherein said hydrogen storage material is disposed in said container, said hydrogen storage material being in gaseous communication with said gaseous hydrogen.

7. The portable heating pack according to claim 6, wherein said hydrogen storage material is intimately mixed with said supercorroding metallic alloy.

8. The portable heating pack according to claim 4, wherein said hydrogen storage material is disposed in a hydrogen storage vessel in gaseous communication with said container.

9. The portable heating pack according to claim 4, wherein said hydrogen storage material is selected from AB , A_2B , AB_2 , or AB_5 type alloys.

10. The portable heating pack according to claim 4, wherein said hydrogen storage material is selected from Mg alloy systems, Mg-Ni alloy systems, Mg-Cu alloy systems, Ti-Fe alloy systems, Ti-Mn alloy systems, Ti-Ni alloy systems, Ti-V alloy systems, Ti-Cr alloy systems, Mn-Ni alloy systems, Mn-Co alloy systems, or combinations thereof.

11. The portable heating pack according to claim 4, wherein said portable heating pack further comprises an oxide material adapted to consume said gaseous hydrogen via a reduction reaction, said oxide material being in gaseous communication with said gaseous hydrogen.

12. The portable heating pack according to claim 11, wherein said oxide material is intimately mixed with said supercorroding metallic alloy powder.

13. The portable heating pack according to claim 11, wherein said oxide material is an oxide of at least one metal selected from copper, silver, manganese, nickel, zinc, cadmium, or mercury.

14. The portable heating pack according to claim 4, wherein said supercorroding metallic alloy is a magnesium-iron alloy.

15. The portable heating pack according to claim 4, wherein said portable heating pack further comprises a high surface area carbon intimately mixed with said supercorroding alloy powder.

16. A portable heating pack comprising:
a supercorroding metallic alloy adapted to produce heat and gaseous hydrogen upon contacting a corroding liquid; and

an oxide material adapted to consume said gaseous hydrogen via a reduction reaction, wherein the oxide material is in gaseous communication with the gaseous hydrogen.

17. The portable heating pack according to claim 16, wherein said oxide material is intimately mixed with said supercorroding metallic alloy powder.

18. The portable heating pack according to claim 16, wherein said oxide material is an oxide of at least one metal selected from copper, silver, manganese, nickel, zinc, cadmium, or mercury.

19. The portable heating pack according to claim 16, wherein said supercorroding metallic alloy is a magnesium-iron alloy.

20. The portable heating pack according to claim 16, wherein said portable heating pack further comprises a high surface area carbon intimately mixed with said supercorroding alloy powder.